ALLIED
HIGH TECH PRODUCTS, INC.

Product Brochure


# TechCut 5™

## PRECISION HIGH SPEED SAW

*A VERSATILE, PROGRAMMABLE SECTIONING MACHINE DESIGNED TO CUT A WIDE VARIETY AND SIZE OF MATERIALS*

Quality Products for Metallographic Sample Preparation & Analysis

The **TechCut 5**™ precision high speed saw is a versatile, programmable machine designed to cut a wide variety and size of materials.

It automatically sections materials at high speeds, increasing sample throughput.

The microprocessor-based system controls sample feed rate, distance and force, and automatically adjusts feed rate as the cutting condition changes due to varying thickness and/or material differences in the sample.

When sectioning is complete, the table automatically retracts the sample to the home position and stops blade rotation and coolant.

The unique fixturing system allows for easy changes between the T-slot table and the X-axis tables. Both table types offer a variety of convenient table-specific fixture options.

***Tables, accessories and consumables are sold separately.***

| Item | Description |
|---|---|
| **5-5700-ER** | **TechCut 5**™ with External Reservoir, 100-240 V |
| **5-5700-IR** | **TechCut 5**™ with Internal Reservoir, 100-240 V |

## *Features:*

- Unique fixturing design that allows use of either indexing or T-slot tables
- Soft-starting function for easing blade into cut/material
- Adjustable cut depth with high speed auto retraction
- Sample rotation for difficult, round or thick samples (requires rotation attachment)
- Touchpad switches to control all functions

## Unparalleled Fixturing Versatility


The TechCut 5's unique design allows the use of either a T-slot table or X-axis indexing table, which are easily and quickly changed to support a wide range of fixture configurations.

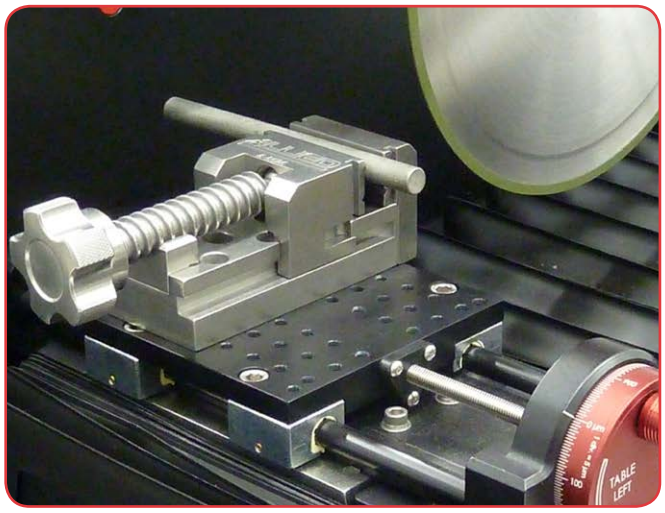
The increased surface of the T-slot table is ideal for larger samples. The indexing tables provide quantitative positioning of the sample to the blade for precision sectioning applications.

This flexibility enables quick breakdown and setup of fixturing when dealing with a wide range of sample shapes and sizes.

## Easy to Use


Featuring an intuitive control panel and backlit display, the TechCut 5™ is easy to operate, allowing greater efficiency among users. Select between imperial or metric units. All keypad buttons feature icon-based graphics that are easy to read, including Y-axis stage movement, RPM, force, coolant and sample rotation.

## Automatic Sample Feed



During the cutting process, adaptive force control optimizes the feed rate through the sectioning process, allowing the operator to select force or feed as the preference for control.

As thicker or harder regions of the sample pass through the blade, the resistance will increase. The adaptive control lowers the feed rate as it passes through this region and raises it when it detects less resistance.

Cut depth can be set either with the pre-defined options, ranging from from 0.25" (6 mm) to 5" (125 mm), or by the user via the ADJ (adjustable) setting up to 4.25" (108 mm).

Jog functionality allows the operator to quickly move the sample into position near the blade once the sample is secured.

## Manual Sample Feed

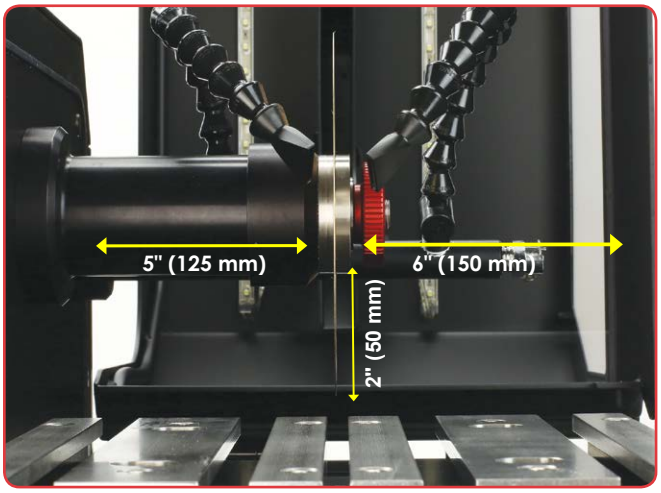

Manual Y-axis sample advancement using the hand wheel provides additional flexibility in positioning and feeding. The wheel is utilized to slowly feed delicate samples into the blade for minimal damage, allowing the user to “feel” the sectioning operation or to quickly position the sample prior to sectioning. It is also convenient for blade dressing.

## Dual Arbor Flange

The TechCut 5™ accommodates blades between 3" (75 mm) and 8" (200 mm) in diameter, with either a 0.5" (12.7 mm) or 1.25" (32 mm) ID arbor hole.


*When reversed, the outer flange features a step-arbor to allow use of blades with a 1.25" (32 mm) arbor hole.*

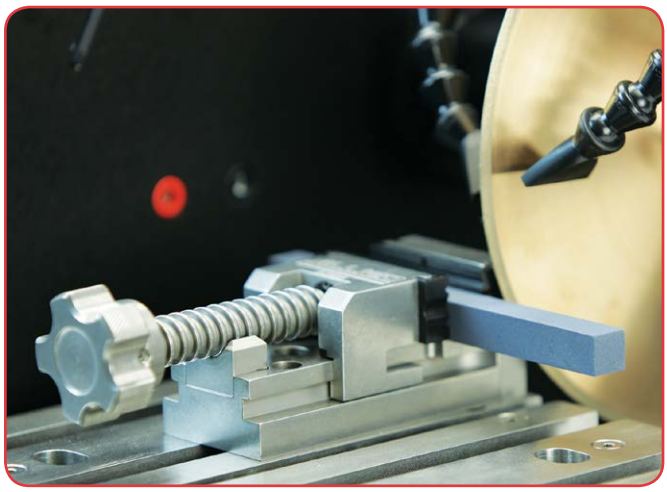
## Large Cutting Compartment




With a 5" (125 mm) clearance to the left-hand side of the blade and 6" (150 mm) to the right side, long and/or large parts are easily accommodated.

The T-slot table provides 2" (50 mm) of clearance beneath the spindle, and the X-axis tables provide 3" (75 mm) of clearance.

## Blade Dressing

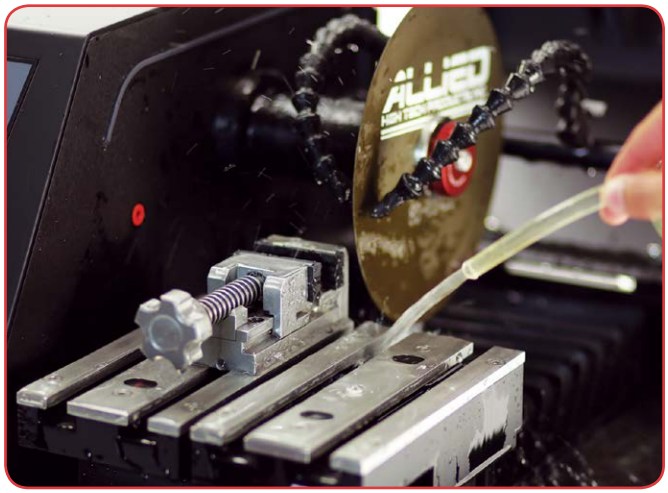


Loaded/clogged blades can easily be dressed to resume optimal cutting performance.  The quick-slide vise or vertical clamp is used to hold the dressing stick, and then indexed manually into the blade using the hand wheel.

## LED Illumination

LED illumination inside the cover allows easy observation of the sectioning process through the large viewing windows.

## Wash-Down Hose



The wash-down hose is used to clean the cutting compartment. A quick-connect fitting on the end of the coolant nozzle bridge allows the hose to be connected for temporary use and disconnected for storage.

## T-Slot Table

The T-slot table allows a wide range of clamping and fixturing options available to accommodate a variety of sample shapes and sizes.

Measuring 7.75" W x 8.25" D (195 x 210 mm), it is machined from aluminum billet and fitted with stainless tops for durability.

| Item | Description |
|---|---|
| 5-5330 | T-Slot Table |

## Table Clamp

Flat samples up to 0.25" (6 mm) thick can easily be secured to the T-slot table with these height adjustable clamps.

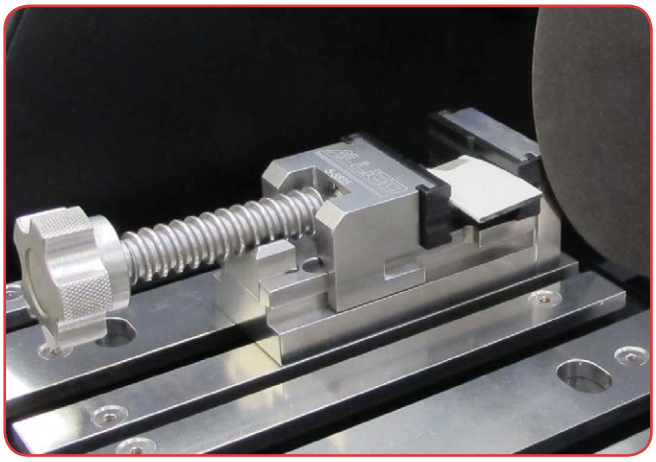
| Item | Description |
|---|---|
| 5-5350 | Table Clamp (Pk/4) |

## Vertical Adjusting Clamp

The vertical adjusting clamp can be positioned in any orientation throughout the T-slots in the table. The height adjustable lever allows various size samples up to 2.25" (57 mm) to be secured. Interchangeable pads allow handling of a variety of sample shapes. One (1) angled pad and one (1) flat pad are included.

| Item | Description |
|---|---|
| 5-4050 | Vertical Adjusting Clamp |
| 5-4050SPA | Swivel Pad Assortment Kit |

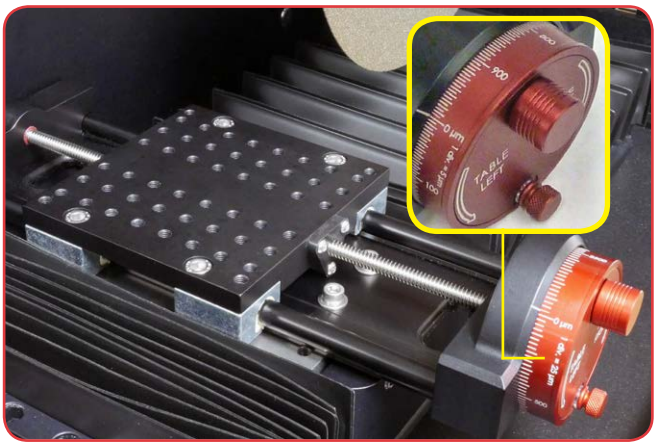
## Quick-Slide Vise



Made of hardened 17-4 stainless steel, the quick-slide vise features a lead-screw that disengages for quick and easy operation. Removable delrin inserts (included) are ideal for holding brittle or delicate samples. The vise mounts directly to the indexing or T-slot tables.

| Item | Description |
|---|---|
| 5-5525 | Quick-Slide Stainless Steel Vise |

# X-Axis Indexing Tables

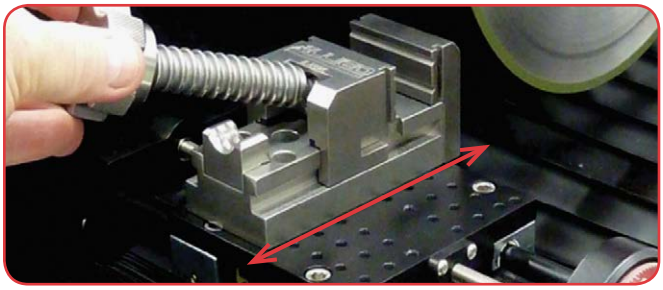


The X-axis indexing tables allow quantitative positioning for sectioning in precise locations. Two resolution options are offered: 25 µm (coarse) and 5 µm (fine). Coarse positioning is more applicable for metallurgical sectioning applications, where fine positioning is more suitable for tight geometry requirements usually found in microelectronic failure analysis and dicing applications.

Both feature 4" (100 mm) of travel and a 0.5" (12.7 mm) center-threaded mounting interface for maximum fixture positioning versatility. The easy-to-read indexing dial can be rotated to allow zeroing of the scale.

| Item | Description |
|---|---|
| 5-5320 | X-Axis Indexing Table, 25 µm Resolution |
| 5-5325 | X-Axis Indexing Table, 5 µm Resolution |

## Quick-Slide Vise

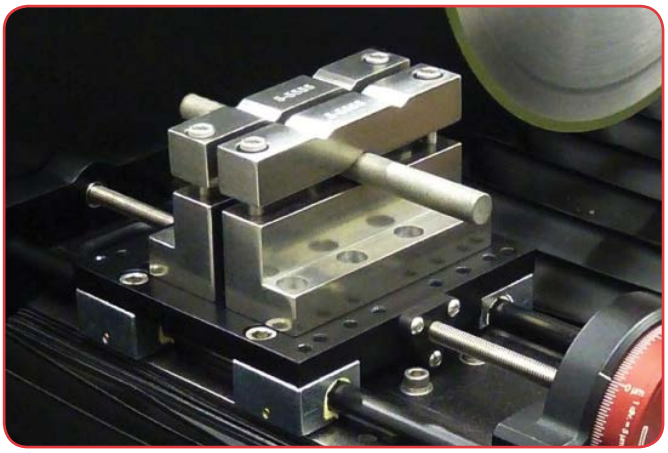


Made of hardened 17-4 stainless steel, the quick-slide vise features a lead-screw that disengages for quick and easy operation.  Mounts directly to the indexing or T-slot tables.

Removable delrin inserts (included) are ideal for holding brittle or delicate samples. (Vise riser #5-5515 shown above.)

| Item | Description |
|---|---|
| 5-5525 | Quick-Slide Stainless Steel Vise |
| 5-5514 | 0.75" (19 mm) Vise Riser |
| 5-5515 | 1.5" (38 mm) Vise Riser |

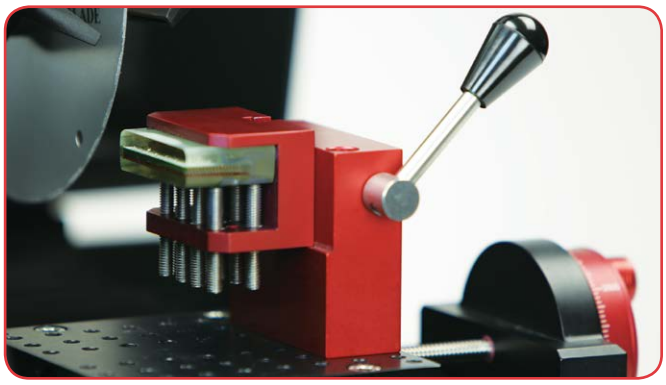
## Saddle Clamps



These stainless steel saddle clamps provide single or dual clamping for cross-section cuts. They mount directly onto the indexing tables and can be spaced at different widths for versatility. V-notches on both sides of the clamp hold parts securely in place.

| Item | Description |
|---|---|
| 5-5555 | Saddle Clamp (Pk/2) |

## Cam-Lock Fixture Adapter



The cam-lock fixture adapter offers a quick and convenient method for securing and detaching the #15-1045 multipurpose fixture to the indexing tables. The sectioned sample can then be transferred without disturbing orientation directly to the MultiPrep™ for grinding/polishing on the same plane.

| Item | Description |
|---|---|
| 5-5520 | Cam-Lock Fixture Adapter |
| 15-1045 | Multipurpose Fixture |

## Rotational Cutting Attachment

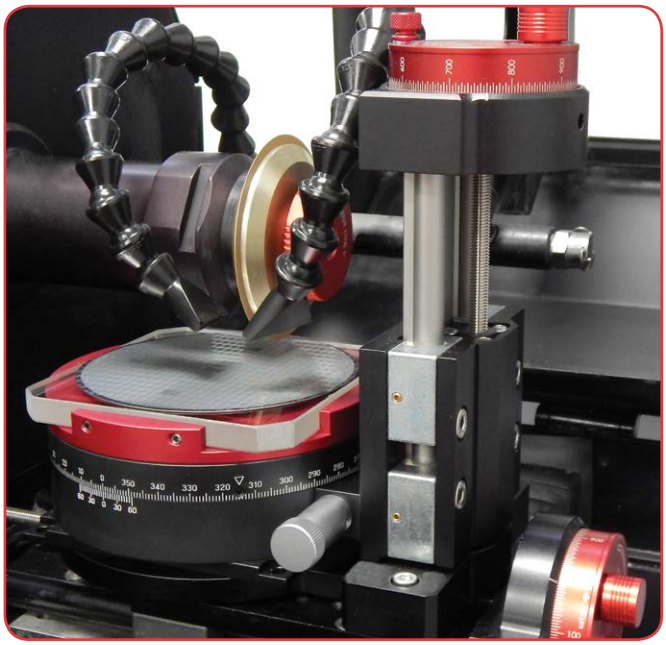
The rotational cutting attachment, which mounts directly to the indexing or T-slot tables, enables sample rotation during a cut. Its benefits include:

- Increased sample thickness capacity
- Shortened cutting time
- Reduced blade/motor load
- Reduced heat on the sample

The sample can be rotated continuously or oscillated through the cut. A variety of fixtures are included (see page 10).

| Item | Description |
|---|---|
| 5-5745 | Rotational Cutting Attachment with Holders |

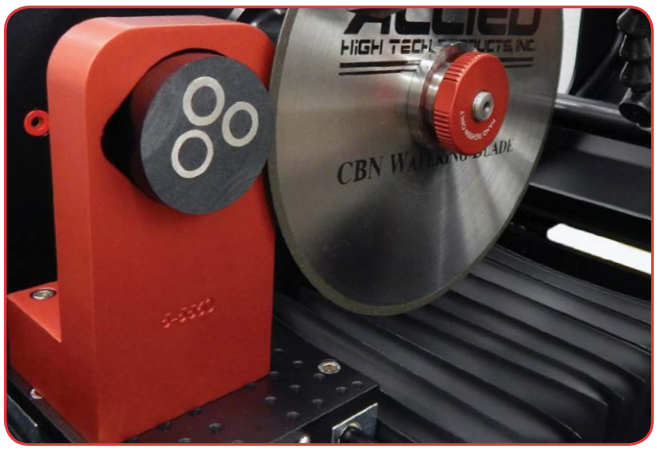
## Dicing Rotation Stage



The dicing rotation stage (shown mounted on #5-5730 Z-axis stage and #5-5325 fine indexing table) allows 360° rotational positioning of flat substrates. Samples are mounted to the borosilicate glass insert using wax, which is secured with set-screws for quick attachment and removal. It can be mounted directly to the indexing tables, or to the Z-stage to control cutting depth.

| Item | Description |
|---|---|
| 5-5540 | Dicing Rotation Stage, 360°/0.1° resolution |

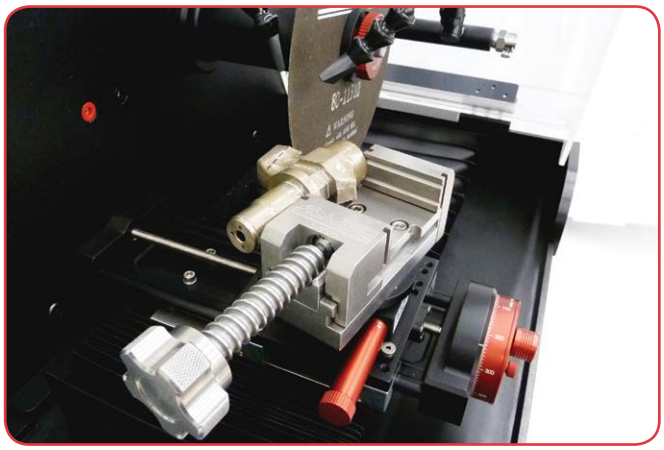
## Teardrop Holder



The teardrop holder secures various sized mounts from 25 mm to 2" diameter. It is mounted to the indexing tables for precise location sectioning, and positions the mount at the center of the blade.

| Item | Description |
|---|---|
| 5-5560 | Teardrop Holder for 25 mm - 2" mounts |

## Fixture Rotation Stage



The fixture rotation stage (shown with #5-5525 vise) allows angle cutting in 2° increments. A variety of fixtures can be mounted to provide rotational adjustment of the sample relative to the blade. It mounts directly to the indexing tables or Z-axis stage.

| Item | Description |
|---|---|
| 5-5070 | Fixture Rotation Stage, 360°/2° resolution |

## Z-Axis Stage

The Z-axis stage (shown mounted on #5-5325 fine indexing table with #5-5540 dicing rotation stage) allows vertical positioning of the sample relative to the blade. It provides 2" (51 mm) of travel with 5 µm increments. The platform has a 0.5" center-threaded mounting interface for stage/fixture positioning versatility, and it mounts directly to the indexing tables.

| Item | Description |
|---|---|
| 5-5730 | Z-Axis Stage, 5 µm increments |

## Multiposition Vise

The multiposition vise allows samples of up to 3" (76 mm) to be secured. It can be mounted directly to the indexing tables, or to the Z-axis or fixture rotation stages.

| Item | Description |
|---|---|
| 5-5510 | Multiposition Vise |

# Coolant System Options

## Internal Reservoir, 1.25 Gallon (4.7 L)

An internal 1.25-gallon (4.7 L) stainless steel reservoir sits beneath the cutting platform. An internal pump draws coolant from the reservoir through a filtered intake designed to prevent clogging.

*Shown with optional #5-5580 Magnetic Particle Collector*

## External Reservoir, 7 Gallon (26.5 L)

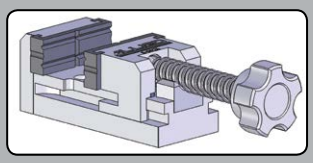
An external, 7-gallon (26.5 L) stainless steel tank that sits below the TechCut 5™ provides added capacity for high-use applications where necessary maintenance of the coolant is less frequent. Power to the pump is supplied through the auxiliary outlet on the back panel. This system features a “catch-filter” for the drain that is easily accessible for cleaning (inset).

## External Filtration System

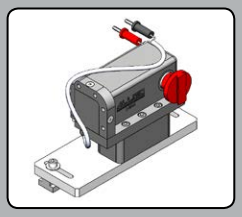
With a reusable/cleanable 75 µm stainless steel filter, this filtration system is designed for applications where excessive debris is generated during sectioning operations (plastics, resins, composites, ferrous metals).

| Item | Description |
|---|---|
| 5-5590 | External Filtration System |

# Universal T-Slot / X-Axis Table Accessories

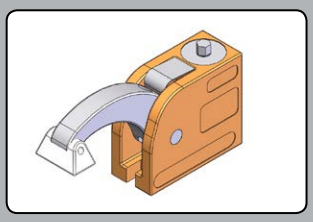


**5-5525**
Quick-Slide Vise with delrin jaw inserts, 2" (51 mm) capacity

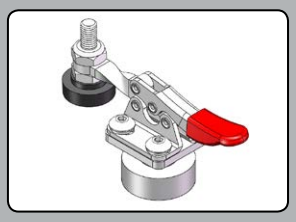


**5-5745**
Rotational Cutting Attachment

# T-Slot Table Accessories

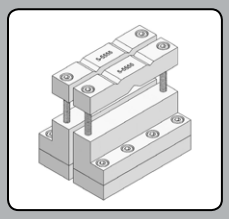


**5-4050**
Vertical Adjusting Clamp

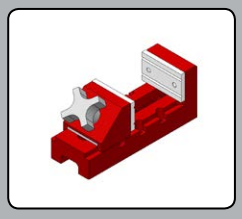


**5-5350**
Table Clamp

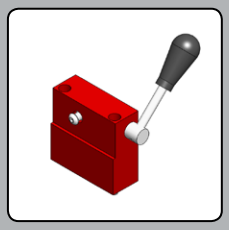
# X-Axis Table Accessories



**5-5555**
Dual Saddle Clamp set, with 0.25" (6 mm) risers

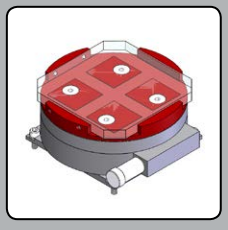


**5-5510**
Multiposition Vise, 3" (76 mm) capacity

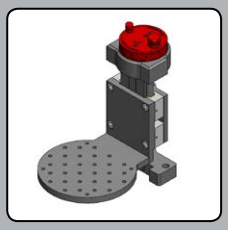


**5-5520**
Cam-Lock Fixture Adapter

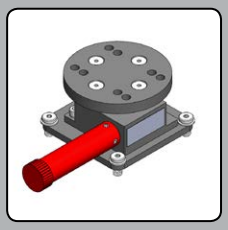
**5-5560**
Teardrop Holder, 25 mm - 2" mounts



**5-5540**
Dicing Rotation Stage

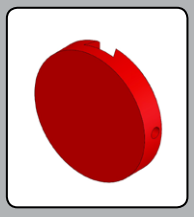


**5-5730**
Z-Axis Stage

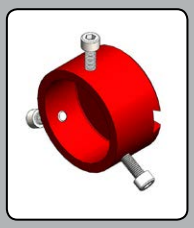


**5-5070**
Fixture Rotation Stage

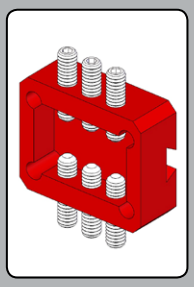
## Rotational Attachment Fixtures



**20-1501**
Surface Mount
Fixture



**20-1507**
Mount Holder,
2" (51 mm)
diameter capacity



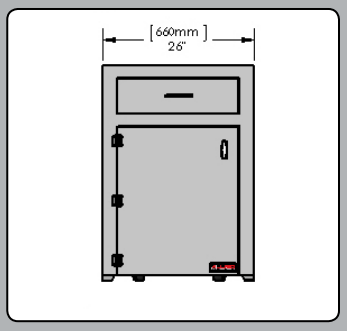
**20-1515**
Multipurpose
Fixture,
1" x 1.5"
(25 x 38 mm)
capacity

**20-1502**
Multipurpose
Fixture,
1.5" x 2"
(38 x 51 mm)
capacity

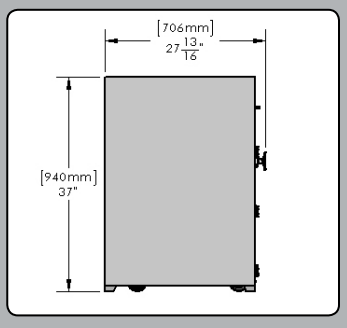
## Cabinet/Stand

**5-4230**
Cabinet

Cabinet - Internal View with
External Coolant Reservoir
(5-5700-ER)

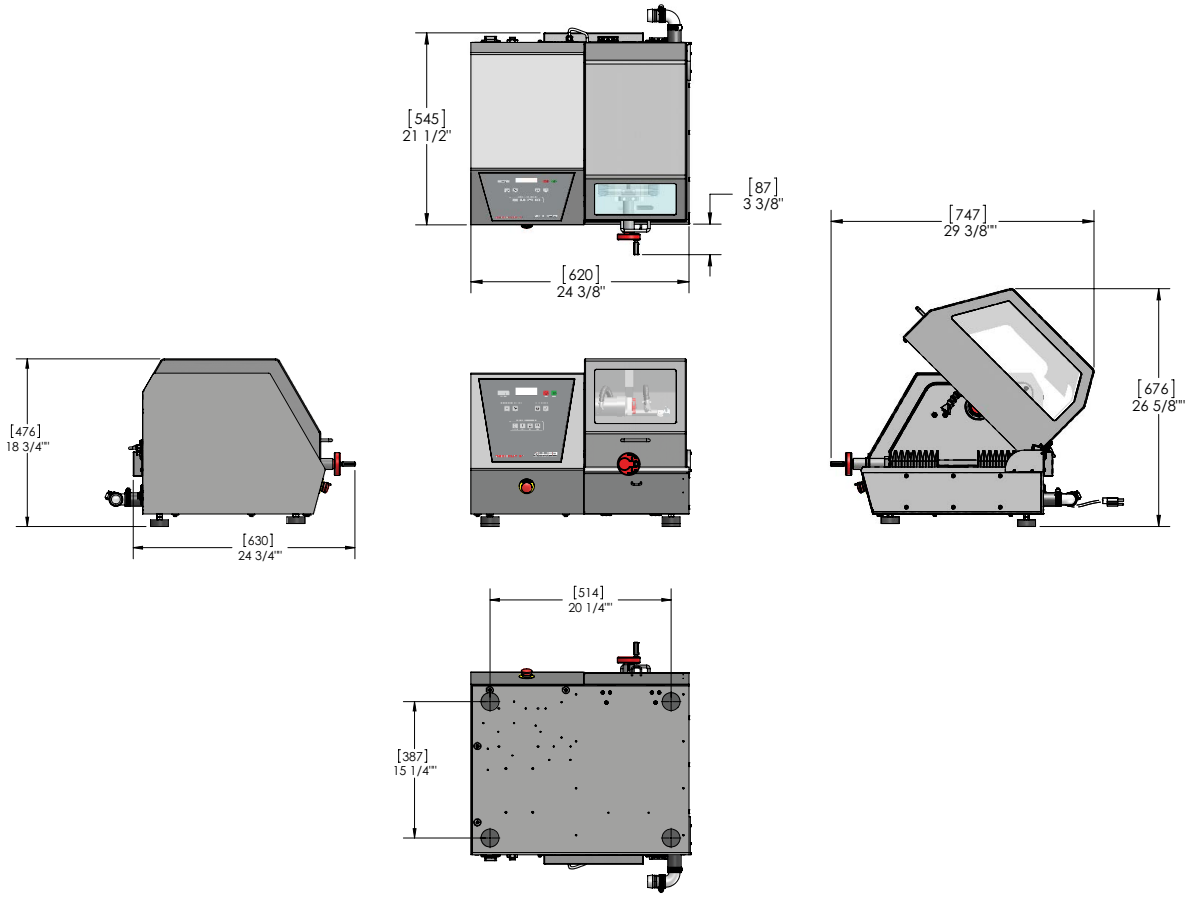



Cabinet (Front Elevation)




Cabinet (Side Elevation)

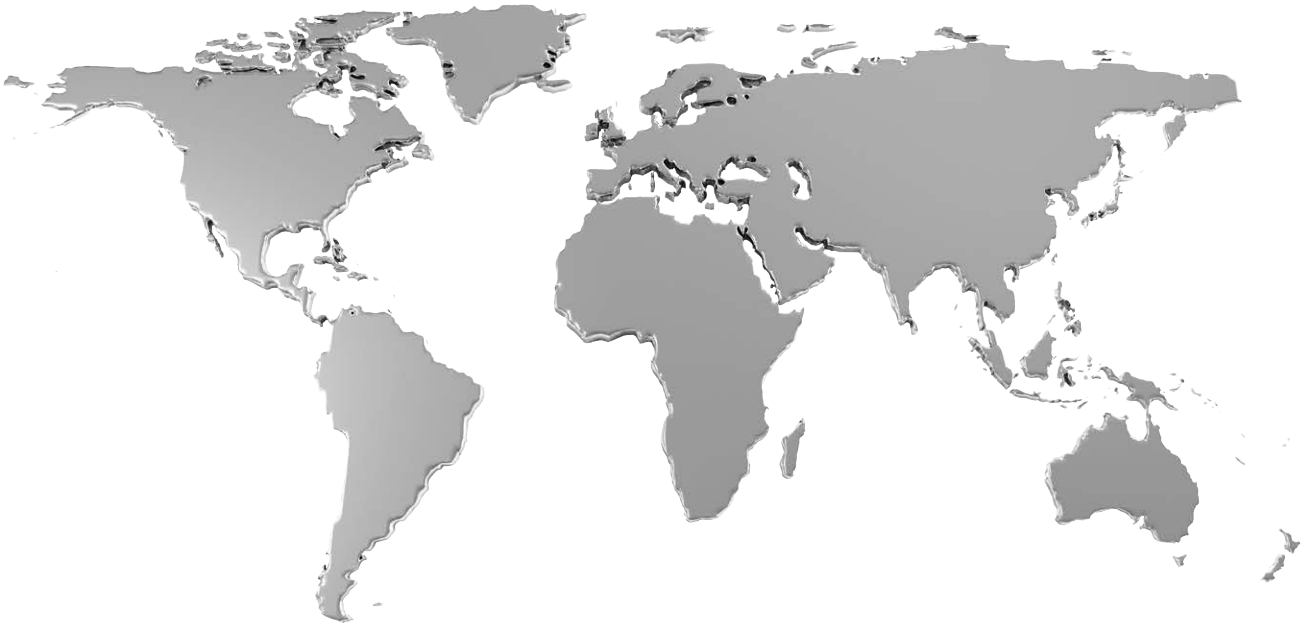
# Dimensions




# Technical Specifications

| | |
|---|---|
| **Blade Range** | Diameter: 3" - 8" (76 - 200 mm)<br>Arbor Hole: 0.5" or 1.25" (12.7 or 32 mm) |
| **Flange Size** | 2" (51 mm) & 3" (76 mm) included |
| **Sample/Cutting Capacity** | 6" W x 6" L x 2.5" H (152 x 152 x 64 mm) |
| **Y-Axis Table** | 8" (203 mm) travel - manual or programmable cut-depth of 0.05" - 3" (1 - 76 mm) per minute |
| **X-Axis Table** | 4" (102 mm) travel, 5 µm or 25 µm increments with zeroing dial |
| **T-Slot Table** | 7.75" D x 8.25" W (195 x 210 mm) with four (4) channels |
| **Force** | Low / Medium / High |
| **Motor Power** | 1.25 HP (950 W) |
| **Blade RPM** | 500 - 5,000 (100 RPM increments) |
| **Electronics** | Microprocessor controlled |
| **Operating Voltage** | 100-240 VAC, single phase 50/60 Hz |
| **Display** | LCD 4 x 16 - imperial or metric units |
| **Cutting Action(s)** | Linear or Linear + Rotation |
| **Recirculating Coolant Capacity** | Internal: 1.25 gallons (4.7 L)<br>External: 7 gallons (26.5 L) |
| **Safety** | Electronic sensor/blade cut-off for cover, Emergency stop |
| **CE** | LVD Directive 2006/95/EC, EN 60204-1:2006+A1:2009, EMC Directive 2004/108/EC |
| **Weight** | 147 lb. (67 kg) |
| **Warranty** | 2 years |
| **Includes** | Operation manual, Country specific power cord |

# Global Distribution of the World's Finest Products



Brochure #: TC5-2016

Equipment is subject to change due to innovations/improvements at any time.

Allied Equipment and Fixtures are Designed and Manufactured by Allied in the USA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